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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,483	07/25/2001	Nozomu Sugo	210803US0	4382

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

LISH, PETER J

ART UNIT PAPER NUMBER

1754

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,483

Applicant(s)

SUGO ET AL.

Examiner

Peter J Lish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-44 is/are pending in the application.
- 4a) Of the above claim(s) 6-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, and 30-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION***Response to Arguments***

Applicant's arguments filed 2/9/04 have been fully considered but they are not persuasive. Applicant argues that the lack of a spinning step distinguishes the activated carbon of the instantly claimed invention over that of the prior art, specifically the reference of Takashi et al. Applicant wrongly argues that the process of Takashi requires grinding after activation of the fibers. Rather, Takashi teaches the grinding of isotropic pitch after infusibilization.

Therefore, regarding applicant's arguments that the carbonization or activation of a fiber will yield different results from the activation of a granular structure, the carbonization and activation of Takashi are performed on granular isotropic pitch.

Applicant argues that infusibilization of a fiber will result in different amounts of oxygen introduced along the major and minor axis of the fiber. The slight differences, which may result from the infusibilization of a fiber vs. the infusibilization of a granular structure, are of minimal consequence in the production of activated carbon. Additionally, applicant wrongly argues that spinning the pitch will convert the properties of the pitch from isotropic to anisotropic.

Certainly, the spinning of an isotropic pitch fiber is possible and known in the art. Therefore, while Takashi teaches that the granular pitch is obtained by grinding spun fibers, the addition of a spinning step is not expected to greatly alter the claimed properties of the activated carbon product.

Regarding applicant's arguments toward the differences in the processes of forming the activated carbon, the fact that the process of Takashi is more complicated or expensive does not distinguish between the product of Takashi and that of the instantly claimed invention.

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Regarding the applicant's argument that Takashi does not explicitly teach the amount of surface functional groups, it is held that the activated carbon of Takashi is expected to meet this limitation, because there is no difference that would produce a substantially different amount of surface functional groups on the activated carbon product seen between the method of making the activated carbon of Takashi and that of the instantly claimed invention. Furthermore, Takashi teaches the removal of surface groups. It is held that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. The burden to show a different product is thereby shifted to the applicant, as the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith. See *In re Brown*, 173 USPQ 685, 688 and *In re Fessman*, 180 USPQ 324.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 30, 32-33, 35-36, 38-39, and 41 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takashi et al. (JP 11-293527).

Takashi et al. disclose the production of activated carbon from optically isotropic pitch material. The pitch is ground to an average particle size of between 5 and 50 microns and treated to produce an activated carbon having a specific surface area in the range of 1600-3000 m²/g (examples 1-3). The activated carbon is then used in the formation of an electrode for an electric double layer capacitor. The activated carbon is mixed with an a binder, such as PVDF or PTFE, and an electrical conducting material such as acetylene black or graphite powder, and pressure-rolled into a sheet. The sheet is used as an electrode in an electric double layer capacitor, which consists essentially of the electrodes, a current collector set onto each electrode, and an electrolyte solution (figure 1).

Takashi et al. disclose a method for the production of activated carbon to be used in forming an electrode for an electric double layer capacitor. Takashi et al. teach that optically isotropic pitch is ground into particles with an average diameter between 5 microns and 50 microns. The pitch is then infusibilized in an oxidizing atmosphere, preferably air, at a temperature between 100-350 °C. The infusibilized pitch is then optionally carbonized in an inert atmosphere, such as nitrogen, at a temperature of less than 1000 °C, more preferably between 350-800 °C. The infusibilized or carbonized particles are then activated by alkali treatment. The particles are mixed with an alkali metal compound, preferably potassium hydroxide, in a ratio of between 1-4 times by weight KOH per carbon particle. The mixture is then heated in an inert to a temperature between 500-900 °C. Rinsing, etc, may remove the alkali metal compounds remaining on the carbon particles after activation.

Because the process taught by Takashi et al. is equivalent to that of the applicant, it is expected that the activated carbon product will correspondingly be identical to that of the

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applicant. Furthermore, it is expected that the limitations regarding surface functional groups will be possessed by the activated carbon of Takashi et al. because Takashi et al. teaches the removal of alkali metal compounds from the surface of the activated carbon particles. It is also expected that the limitations of claim 5 will be possessed by the activated carbon of Takashi et al. because non-graphitized pitch-based carbon is expected to be less graphitic in its character than graphite itself. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to use the process of Takashi et al. to produce activated carbon particles with properties equivalent to those of applicant.

Takashi et al. does not explicitly disclose the density of the electrodes or the expansion ratio of the electrodes after charging and discharging. It is expected that since both the materials and the method used to create the electrode and capacitor are identical to that of the applicant, the properties of the electrode and capacitor will correspondingly be identical. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to use the materials and process of Takashi to produce an electrode and capacitor with the claimed properties.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 31, 34, 37, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al. as applied to claims 30 and 36 above, and further taken with JP 06232006 A.

Takashi et al. teach that the activated carbon may be formed into an electrode by any known means, however they do not explicitly disclose applying a paste mixture of the activated carbon to a surface.

JP 06232006 A discloses the formation of an electrode for an electric double layer capacitor by coating a paste consisting of polyethylene binder, acetylene black conductive agent, and activated carbon, onto the collector object. It would have been obvious to one of ordinary skill to use this method to form the electrode for a double layer capacitor in the process of Takashi et al.

Neither Takashi et al. nor JP 06232006 A explicitly disclose the density of the electrode or the expansion ratio of the electrodes after charging and discharging. It is expected that since both the materials and the method used to create the electrode and capacitor are identical to that of the applicant, the properties of the electrode and capacitor will correspondingly be identical. Alternatively, it would have been obvious to one of ordinary skill at the time of invention to use the materials and process of Takashi et al. taken with JP 06232006 A to produce an electrode and capacitor with the claimed properties.

Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi et al.

Takashi is applied above. The pitch is ground to an average particle size of between 5 and 50 microns and treated to produce an activated carbon having a corresponding particle size

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as well as a specific surface area in the range of 1600-3000 m²/g. It therefore would have been obvious to one of ordinary skill at the time of invention to produce an activated carbon having particle size and specific surface area within the claimed ranges.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



PL

STUART L. HENDRICKSON
PRIMARY EXAMINER